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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,768	07/06/2001	Katsuya Sakayori	OPS Case 537	7697

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/900,768

Applicant(s)

SAKAYORI ET AL.

Examiner

Lynette T. Umez-Eronini

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On lines 2-3, "wherein a laminate is comprised of whole the layers forming an insulating layer made of polyimide resin" is vague and indefinite because its meaning is unclear.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennin et al. (US 5,839,193) in view of Watanabe et al. (US 6,303,230 B1).

Bennin teaches, "HSAs are used in magnetic hard disk drives . . . (column 1, lines 29-31) and "new laminate structures for use in head suspension assemblies (HSAs) and a method to manufacture the laminate structures" (column 3, lines 56-58),

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which is the same as a method of manufacturing a wireless suspension blank. Bennin also teaches, "The first step in the manufacture of laminate structures . . . is to provide a multi-layer laminate sheet **10** such as the one illustrated in **FIG. 3**" (column 7, lines 4-6). "First layer **50** is . . . a metal spring material" (column 7, lines 14-16). "The second layer **90** is a . . . sheet of epoxy, an adhesive and dielectric or insulating material. . . . "Other embodiments, shown in **FIGS. 7-9**, use thermoplastic polyimide" (column 7, lines 20-28). "The third layer **70** is . . . a sheet of beryllium copper . . . , a conductive metal spring material . . . (column 7, lines 41-50). "The second step in the manufacture of laminated structures is to form and pattern the two outside metal layers, first layer **50** and third layer **70**, into elements for the desired laminate structure. . . . Both the first layer **50** and the third layer **70** can be chemically etched in a variety of continuous or discontinuous patterns using common etchants such as ferric chloride. Either the first layer **50** or the third layer **70** can be etched first. Layers **50** and **70** can even be etched simultaneously" (column 7, lines 52-62). The aforementioned reads on,

A method of manufacturing a wireless suspension blank in which three layered laminate formed of a metallic layer having the spring property and a conductive layer laminated on the metallic layer through an electrically insulating layer are used, wherein the laminate comprises the insulating layer formed of a core-insulating layer and adhesive layers applied on both sides of the core-insulating layer. Since Bennin etches the same materials by using the same etchant and etching method as that of the claimed invention, then using Bennin's etching method would result with the ratio of higher etching rate to lower etching rate of the respective layers of the insulating layer

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of between 6:1 and 1:1. The said aforementioned further reads on, the method comprises the steps of a step for processing the metallic layer and the conductive layer by the photo etching method, respectively, **as in claims 1, 5 and 6.**

Bennin differs in failing to teach a step for forming a resist pattern for processing the insulating layer, and a step for processing the insulating layer through the resist pattern by the wet etching method, **in claim 1**; and wherein the ratio of etching rates of the respective layers of the insulating layer is a value in a case where the insulating layer is etched in alkali solution, **as in claim 7.**

Watanabe teaches a “. . . a four-layer laminate with the structure of stainless steel foil/polyimide precursor layer/photosensitive resin layer/protective film” (column 9, lines 8-11). . . . “Thereafter the laminate was stripped of the protective film . . . (column 9, lines 16-19). The . . . photosensitive resin layer alone had been patterned was etched in . . . a 10% aqueous solution of sodium hydroxide . . . The bare portion of the polyimide precursor layer was removed clean and the substrate stainless steel foil was visually confirmed” (column 9, lines 20-27), which reads on a step for processing the insulating layer through the resist pattern by the wet etching method. Since Bennin's method of forming a laminate that comprises an insulating layer is combined with Watanabe's method of etching the same insulating layer in a laminate with an alkali solution, then the said combined would result wherein the ratio of etching rates of the respective layers of the insulating layer is a value in a case where the insulating layer is etched in alkali solution, as claimed in the present invention.

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Hence, it is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Bennin by using Watanabe's method of wet etching an insulating layer for the purpose of providing laminates of high reliability and fabricability useful for the preparation of HDD (hard disk drive) suspensions (Watanabe, column 1, lines 54-56).

Since Bennin uses the same method of etching the same materials with the same etchant as that of the claimed invention, then using Bennin's etching method would result wherein the ratio of higher etching rate to lower etching rate of the respective layers of the insulating layer is between 4:4 and 1:1, **as in claim 2**; and

wherein as the laminate used is a laminate in which the ratio of the thickness of core-insulating layer to the thickness of adhesive layer is 4:1 at maximum is used, **as in claim 4**.

Also, since Bennin uses the same materials in making a laminate as those of the claimed invention, then using Bennin's method of making a laminate would result wherein as the laminate used is a laminate in which the adhesive strength of adhesive layer to metallic layer, conductive layer and core-insulating layer is at least 300 g/cm, **as in claim 3**.

5. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennin ('193) in view of Watanabe ('230 B1).

Bennin teaches, "HSAs are used in magnetic hard disk drives . . . (column 1, lines 29-31) and "new laminate structures for use in head suspension assemblies

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(HSAs) and a method to manufacture the laminate structures" (column 3, lines 56-58), which is the same as a method of manufacturing a wireless suspension blank. "The first step in the manufacture of laminate structures . . . is to provide a multi-layer laminate sheet **10** such as the one illustrated in **FIG. 3**" (column 7, lines 4-6). "First layer **50** is . . . a metal spring material" (column 7, lines 14-16). "The second layer **90** is a . . . sheet of epoxy, an adhesive and dielectric or insulating material (which is the same as applicant's insulating layer formed of a core-insulating layer and adhesive layers laminated). . . . Other embodiments, shown in **FIGS. 7-9**, use thermoplastic polyimide," (which is the same as applicant's laminate in which any or the two of core-insulating layer and adhesive layer is made of polyimide resin), (column 7, lines 20-28). "The third layer **70** is . . . a sheet of beryllium copper . . . , a conductive metal spring material . . . (column 7, lines 41-50). "The second step in the manufacture of laminated structures is to form and pattern the two outside metal layers, first layer **50** and third layer **70**, into elements for the desired laminate structure. . . . Both the first layer **50** and the third layer **70** can be chemically etched in a variety of continuous or discontinuous patterns using common etchants such as ferric chloride. Either the first layer **50** or the third layer **70** can be etched first. Layers **50** and **70** can even be etched simultaneously" (column 7, lines 52-62). The aforementioned reads on,

A method of manufacturing a wireless suspension blank in which two layered laminate formed of a metallic layer having the spring property and a conductive layer laminated on the metallic layer through are used, wherein the laminate comprises the insulating layer formed of a core-insulating layer and adhesive layers laminated on the

core-insulating layer. Since Bennin etches the same materials by using the same etchant and etching method as that of the claimed invention, then using Bennin's etching method would result with the ratio of higher etching rate to a lower etching rate of the respective layers of the insulating layer of between 6:1 and 1:1, **as in claim 8**. The said aforementioned further reads on, the method comprises the steps of a step for processing the metallic layer by the photo etching method, and a step for forming a wiring part on the insulating layer by the semi-additive method, **as in claims 8**;

wherein as the laminate used is a laminate in which any or the two of core-insulating layer and adhesive layer is made of polyimide resin is used, **in claim 12**; and

wherein both core-insulating layer and the adhesive layer are made of polyimide resin, **in claim 13**.

Bennin differs in failing to teach a step for forming a resist pattern for processing the insulating layer, and a step for processing the insulating layer through the resist pattern by the wet etching method, **in claim 8**; and wherein the ratio of etching rates of the respective layers of the insulating layer is a value in a case where the insulating layer is etched in alkaline solution, **in claim 14**.

Watanabe teaches a "... a four-layer laminate with the structure of stainless steel foil/polyimide precursor layer/photosensitive resin layer/protective film" (column 9, lines 8-11). "... "Thereafter the laminate was stripped of the protective film ... (column 9, lines 16-19). The ... photosensitive resin layer alone had been patterned was etched in ... a 10% aqueous solution of sodium hydroxide ... The bare portion of the polyimide precursor layer was removed clean and the substrate stainless steel foil was

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visually confirmed" (column 9, lines 20-27), which reads on a step for processing the insulating layer through the resist pattern by the wet etching method.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Bennin by using Watanabe's method of wet etching an insulating layer for the purpose of providing laminates of high reliability and fabricability useful for the preparation of HDD (hard disk drive suspensions (Watanabe, column 1, lines 54-56).

Since Bennin uses the same method of etching the same materials with the same etchant as that of the claimed invention, then using Bennin's etching method would result wherein the ratio of higher etching rate to lower etching rate of the respective layers of the insulating layer is between 4:4 and 1:1, **as in claim 9.**

Also, since Bennin uses the same materials in making a laminate as those of the claimed invention, then using Bennin's method of making a laminate would result wherein as the laminate used is a laminate in which the adhesive strength of adhesive layer to metallic layer, conductive layer and core-insulating layer is at least 300 g/cm, **as in claim 10; and**


wherein as the laminate used is a laminate in which the ratio of the thickness of core-insulating layer to the thickness of adhesive layer is 4:1 at maximum is used, **as in claim 11.**

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 703-306-9074. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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May 15, 2003


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